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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/494,589	01/31/2000	ANTHONY R.A. KEANE	C34932/114785	3652

7590 04/15/2004

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EXAMINER	
MILORD, MARCEAU	

ART UNIT	PAPER NUMBER
2682	9 Remail

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)
	09/494,589	KEANE ET AL.
	Examiner	Art Unit
	Marceau Milord	2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner et al (US Patent No 5939886) in view of Williams et al (US Patent No 5472561).

Regarding claims 1- 11, Turner et al discloses an apparatus for measuring the characteristics of radio frequency energy (figs. 1-3) in an industrial radio frequency processing system (col. 3, line 6- col. 4, line 45) comprising: a plurality of generator means (12 of figs. 1 and 5) for generating a plurality of power outputs onto a single transmission means (col. 7, lines 29-54), at a plurality of frequencies, each one of said plurality of outputs having associated characteristics (col. 8, line 30- col. 9, line 40); and common detection means (174 of fig. 12 or 214 of fig. 14) for detecting said associated characteristics of said plurality of outputs, said detection means comprising means for sensing said associated characteristics of a first generated output at a first frequency (col. 13, line 26- col. 14, line 7).

However, Turner et al does not specifically disclose the features of a means for sensing said associated characteristics of a first generated output at a first frequency, alternating to a second frequency, and sensing said associated characteristics of said second generated output at said second frequency.

On the other hand, Williams et al, from the same field of endeavor, discloses a RF sensor for monitoring voltage, current and phase angle of a RF signal being coupled to a plasma reactor. Outputs from the sensor are used to calculate various properties of the plasma (col. 1, line 54- col. 2, line 8). Furthermore, Williams shows in figure 2, three sensors outputs that can be obtained from sensor 13. The three outputs from sensor 13 are designated as RF voltage, RF current and DC voltage (col. 4,lines 1-25). In addition, the RF voltage, and RF current can be frequency discriminated to obtain the fundamental and harmonic components of the RF signal. Simply, the RF voltage, and RF current are coupled through separate filters for passing the fundamental frequency and/or one or more harmonic components (col. 5, lines 44-62; col. 6,lines 43-55; col. 7, line 46- col. 8, line 18). The output values from the sensor can be utilized to estimate a number of plasma parameters and performance characteristics (col. 9, line 41- col. 10, line 53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Williams to the system of Turner in order to allow a single device to measure voltage, current, and phase at more than one frequency.

Regarding claims 12-22, Turner et al discloses a method for measuring characteristics of radio frequency energy (figs. 1-3) delivered in an industrial radio frequency processing system (col. 3, line 6- col. 4, line 45) comprising: generating (12 of figs. 1 and 5) a first power output onto a transmission means at a first frequency (col. 7, lines 29-54), said first power output having

associated characteristics (col. 8, line 30- col. 9, line 40); sensing said associated characteristics on said transmission means at said first frequency; switching to said second frequency (col. 9, line 6- col. 10, line 56; col. 13, line 26- col. 14, line 7).

However, Turner et al does not specifically disclose the steps of generating a second power output onto said transmission means at a second frequency, said second power output having said associated characteristics sensing said associated characteristics on said transmission means at said second frequency using a common sensing means used to sense said first frequency.

On the other hand, Williams et al, from the same field of endeavor, discloses a RF sensor for monitoring voltage, current and phase angle of a RF signal being coupled to a plasma reactor. Outputs from the sensor are used to calculate various properties of the plasma (col. 1, line 54- col. 2, line 8). Furthermore, Williams shows in figure 2, three sensors outputs that can be obtained from sensor 13. The three outputs from sensor 13 are designated as RF voltage, RF current and DC voltage (col. 4,lines 1-25). In addition, the RF voltage, and RF current can be frequency discriminated to obtain the fundamental and harmonic components of the RF signal. Simply, the RF voltage, and RF current are coupled through separate filters for passing the fundamental frequency and/or one or more harmonic components (col. 5, lines 44-62; col. 6,lines 43-55; col. 7, line 46- col. 8, line 18). The output values from the sensor can be utilized to estimate a number of plasma parameters and performance characteristics (col. 9, line 41- col. 10, line 53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Williams to the system of Turner in order to allow a single device to measure voltage, current, and phase at more than one frequency.

Regarding claims 23-33, Turner et al discloses an apparatus for measuring characteristics of radio frequency energy (figs. 1-3) delivered in an industrial radio frequency processing system (col. 3, line 6- col. 4, line 45) comprising: a generator means (12 of figs. 1 and 5) for generating power outputs (col. 7, lines 29-54), each one of said outputs having associated characteristics (col. 8, line 30- col. 9, line 40); a plurality of tuning means for tuning to said plurality of frequencies; and common detection means(174 of fig. 12 or 214 of fig. 14) for selecting one of said plurality of tuning means and detecting said associated characteristics of said plurality of outputs at the frequency of said selected tuning means(col. 13, line 26- col. 14, line 7).

However, Turner et al does not specifically disclose a means for generating a plurality of power outputs onto a single transmission means at a plurality of frequencies a means for detecting said associated characteristics of said plurality of outputs at the frequency of said selected tuning means.

On the other hand, Williams et al, from the same field of endeavor, discloses a RF sensor for monitoring voltage, current and phase angle of a RF signal being coupled to a plasma reactor. Outputs from the sensor are used to calculate various properties of the plasma (col. 1, line 54- col. 2, line 8). Furthermore, Williams shows in figure 2, three sensors outputs that can be obtained from sensor 13. The three outputs from sensor 13 are designated as RF voltage, RF current and DC voltage (col. 4,lines 1-25). In addition, the RF voltage, and RF current can be frequency discriminated to obtain the fundamental and harmonic components of the RF signal. Simply, the RF voltage, and RF current are coupled through separate filters for passing the fundamental frequency and/or one or more harmonic components (col. 5, lines 44-62; col. 6,lines 43-55; col. 7, line 46- col. 8, line 18). The output values from the sensor can be utilized to

estimate a number of plasma parameters and performance characteristics (col. 9, line 41- col. 10, line 53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Williams to the system of Turner in order to allow a single device to measure voltage, current, and phase at more than one frequency.

Regarding claims 34- 44, Turner et al discloses method for measuring characteristics of radio frequency energy (figs. 1-3) delivered in an industrial radio frequency processing system (col. 3, line 6- col. 4, line 45) comprising: generating (12 of figs. 1 and 5) a first power output onto a transmission means at a first frequency (col. 7, lines 29-54), said first power output having associated characteristics (col. 8, line 30- col. 9, line 40); tuning a first tuning means to said first frequency (col. 9, line 6- col. 10, line
56) ; tuning a second tuning means to said second frequency; selecting one of said tuning means (col. 13, line 26- col. 14, line 7).

However, Turner et al does not specifically disclose the step of generating a second power output onto said transmission means at a second frequency; sensing said associated characteristics on said transmission means at said frequency associated with said selected tuning means.

On the other hand, Williams et al, from the same field of endeavor, discloses a RF sensor for monitoring voltage, current and phase angle of a RF signal being coupled to a plasma reactor. Outputs from the sensor are used to calculate various properties of the plasma (col. 1, line 54- col. 2, line 8). Furthermore, Williams shows in figure 2, three sensors outputs that can be obtained from sensor 13. The three outputs from sensor 13 are designated as RF voltage, RF current and DC voltage (col. 4,lines 1-25). In addition, the RF voltage, and RF current can be

frequency discriminated to obtain the fundamental and harmonic components of the RF signal. Simply, the RF voltage, and RF current are coupled through separate filters for passing the fundamental frequency and/or one or more harmonic components (col. 5, lines 44-62; col. 6,lines 43-55; col. 7, line 46- col. 8, line 18). The output values from the sensor can be utilized to estimate a number of plasma parameters and performance characteristics (col. 9, line 41- col. 10, line 53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Williams to the system of Turner in order to allow a single device to measure voltage, current, and phase at more than one frequency.

Response to Arguments

3. Applicant's arguments with respect to claims 1-44 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 703-306-3023. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MARCEAU MILORD

Marceau Milord

Examiner

Art Unit 2682